

Remarks

Applicant respectfully requests reconsideration of the above referenced application. Claim 1 is amended. Claim 5 is canceled without prejudice. New machine readable physical storage medium claims 20-25 are added. No other claims are amended, added, or canceled. Therefore, claims 1-4, 6-7, and 20-25 are pending.

The above amendment to claim 1 is made consistent with an interview with the Examiner on October 3, 2006. The Examiner filed an Interview Summary on October 11, 2006. Applicants provide a summary of the Interview below.

Interview Summary

A telephonic interview took place on October 3, 2006 regarding this application and co-pending application 09/274,152. Participating in the interview were Examiners Richard Lee and Tung Vo and patent attorneys Paul Mendonsa and Jose Mata.

Mendonsa and Mata proposed amending claim 1 to recite that if a temporally closest anchor frame is previous to a B-frame, then only unidirectionally forward predicting of the B-frame would be performed, using only the temporally closest anchor frame for the prediction. Claim 1 would further recite that if a temporally closest anchor frame is subsequent to a B-frame, then only unidirectionally backward predicting of the B-frame would be performed, using only the temporally closest anchor frame.

It was agreed that Mendonsa and Mata would fax a copy of a probable amendment to claim 1. After the call was terminated, Examiners Lee and Vo called back

and reached Mr. Mata explaining that the previous discussion applied to the *Ju* reference, but not the *Ngai* reference. Mr. Mata expressed his view that the previously discussed amendment would overcome the rejections based on *Ngai* as well.

On October 4, 2006, Mr. Mata faxed the following proposed amendment to claim 1 to Examiner Lee:

1. A method for performing motion estimation comprising:
receiving a stream of data comprising one or more bidirectionally interpolated frames (B-frame) and a plurality of anchor frames; and
unidirectionally predicting content of each B-frame from a temporally closest anchor frame, wherein, with respect to each B-frame:
if the temporally closest anchor frame is previous to the B-frame, only
unidirectionally forward predicting the content of the B-frame from only the
temporally closest anchor frame;
if the temporally closest anchor frame is subsequent to the B-frame, only
unidirectionally backward predicting the content of the B-frame from only the
temporally closest anchor frame; and
wherein the unidirectionally predicted B-frame that is predicted only from
the temporally closest anchor frame comprises a frame that is defined as a bi-
directionally predicted frame according to an encoding protocol for the stream of
data.

Mr. Mata and Mr. Mendonsa have not had subsequent telephonic communications with Examiner Lee regarding the above proposed amendment.

Amendment to the Specification

1. Applicants have amended the first paragraph of the Specification to indicate that the current application claims priority as a continuation-in-part of non-provisional

application no. 09/209,828 by Michael Keith for a “Simplified Predictive Video Encoder”, filed December 11, 1998. Applicants further amend the first paragraph of the Specification to recite that the above parent application has issued as U.S. Patent No. 6,904,174.

2. The current Application claims priority to provisional application 60/080,501 (filed April 2, 1998) and as a continuation-in-part to the non-provisional application 09/209,828 (filed December 11, 1998). Applicants submit an amendment to the Specification to show other applications/patents that also claim priority to either of the above applications:

U.S Pat. No. 6408029, Issued 6/18/2002, Applic. No. 09/274153, Filed 3/22/1999

U.S. Pat. No. 6574278, Issued 6/3/2003, Applic. No. 09/274151, Filed 3/22/1999

U.S. Pat No. 7046734, Issued 5/16/2006, Applic. No. 10/339016, Filed 1/8/2003

Applic. No. 11/129558, Filed 12/1/2005

Applic. No. 09/274,152, Filed 3/22/1999 (Discussed below).

This information is submitted merely for purposes of disclosure and Applicants make no representation regarding the above cases. An Information Disclosure Statement (IDS) with references is submitted with this Response.

Provisional Double Patenting Rejection

The August 22, 2006 Office Action (“Office Action”) provisionally rejects claim 1 on the ground of nonstatutory double patenting over claim 20 of copending Application

No. 09/274,152. The rejection is provisional only because the allegedly conflicting claim has not yet been patented.

Applicants submit along with this Response an executed Terminal Disclaimer to Obviate a Provisional Double Patenting Rejection over a Pending Second Application. Both applications have been commonly assigned to and are owned by Intel Corporation of Santa Clara, CA. Applicants respectfully request that the provisional nonstatutory double-patenting rejection of claim 1 be withdrawn.

Claim Rejections - 35 U.S.C. § 102(e)

Claims 1-5 are rejected as anticipated by U.S. Patent No. 5,650,823 issued to Ngai et al. (*Ngai*). "A claim is anticipated only if **each and every element as set forth in the claim** is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131 quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). Further, "[t]he **identical invention** must be shown in **as complete detail as is contained in the ... claim.**" *Id.*, quoting, *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (emphasis added).

The rejection of claim 5 is moot because claim 5 has been canceled without prejudice. For at least the reasons set forth below, Applicants submit that claims 1-4 are not anticipated by *Ngai*.

Claim 1 now recites:

1. A method for performing motion estimation comprising:
receiving a stream of data comprising one or more bidirectionally
interpolated frames (B-frame) and a plurality of anchor frames; and
unidirectionally predicting content of each B-frame from a temporally
closest anchor frame, wherein, with respect to each B-frame:
**if the temporally closest anchor frame is previous to the B-frame, only
unidirectionally forward predicting the content of the B-frame from only the
temporally closest anchor frame;**
**if the temporally closest anchor frame is subsequent to the B-frame,
only unidirectionally backward predicting the content of the B-frame from only
the temporally closest anchor frame;** and
wherein the unidirectionally predicted B-frame that is predicted only from
the temporally closest anchor frame comprises a frame that is defined as a bi-
directionally predicted frame according to an encoding protocol for the stream of
data.

(Emphasis added).

Thus, the emphasized portions of claim 1 recite that a B-frame is predicted only as follows: 1) a B-frame is only unidirectionally forward predicted if the temporally closest anchor frame is prior to the B-frame; and 2) the B-frame is only unidirectionally backward predicted if the temporally closest anchor frame is subsequent to the B-frame. That is, under claim 1, the location of the temporally closest anchor frame determines whether the unidirectional predicting of the B-frame is forward or backward. *Ngai* fails to teach at least the above limitations of claim 1 and therefore does not anticipate claim 1.

Further, claim 1 recites that the manner of prediction is made a frame at a time. For example, if the closest anchor frame is prior to the predicted frame, then the entire B-

frame is only unidirectionally forward predicted. The manner of prediction is not determined a macroblock at a time. Thus, claim 1 recites frame-based prediction. As discussed below, *Ngai* describe macro-block-based prediction and thus fails to teach at least this limitation of claim 1. Thus, *Ngai*, for a second reason, does not anticipate claim 1.

In rejecting claim 1, the Office cites col. 2, lines 45-52 of *Ngai* as describing “unidirectionally predicting content of each B-frame from a temporally closest anchor frame.” (Office Action, p. 4, ¶ 7). But Ngai does not describe inidirectionally predicting content of each B-frame from a temporally closest-anchor frame. The cited portion of *Ngai* states in relevant part:

[A] “B” Bidirectional Picture can be coded by **forward prediction** from the **closest past** “I” or “P” Picture, by **backward prediction** from the **closest future** “I” or “P” Picture, or bidirectionally

Ngai, col. 2, lines 46-49 (Emphasis added).

The above passage shows that *Ngai* first decides whether it is performing forward prediction or backward prediction. Then it selects the anchor frame that is the closest in the direction in which it has already decided to predict. If it is doing forward prediction, it uses the “closest past” anchor picture even if the closest anchor picture is a future picture. If it is doing backward prediction, it uses the “closest future” anchor picture even if the closest anchor picture is a past picture. Thus, what is disclosed in *Ngai* cannot guarantee that the only temporally closest anchor frame will be used for the B-frame being processed.

The prediction technique described in *Ngai* is the exact opposite of what claim 1 recites. Under claim 1, the location of the temporally closest anchor frame is what determines whether the prediction is unidirectionally forward or unidirectionally backward. If the temporally closest anchor frame precedes the predicted frame, then only unidirectional forward prediction is done. If the temporally closest anchor frame succeeds the predicted frame, the only unidirectional backward prediction is done. The location of the temporally closest anchor frame determines whether unidirectional forward or backward prediction is performed. *Ngai* fails to teach at least the above limitations of claim 1 and therefore does not anticipate claim 1.

Ngai also fails to teach or suggest frame-based prediction, as recited by claim 1. *Ngai* states, “Per the MPEG standard, **motion estimation is performed on the macroblock**. The video image is divided into units of 16 x 16 pixels called a macroblock.” (*Ngai*, col. 5, lines 7-9) (Emphasis added). *Ngai* also states, “**each 16 x 16 pixel block** of a ‘B’ Bidirectional picture can be coded by forward prediction from the closest past ‘I’ or ‘P’ Picture . . .” (*Ngai*, col. 2, lines 45-48) (Emphasis added). In contrast, as discussed above, claim 1 recites frame-based prediction. Of necessity, when prediction of the “content” of a B-frame is performed using only the temporally closest anchor frame, then the decision on the direction of unidirectional prediction is made on a frame-by-frame basis.

Therefore, *Ngai* also fails to teach at least the above limitations of claim 1. Therefore, this is another reason why claim 1 is not anticipated by *Ngai*. For at least all the above reasons, *Ngai* does not anticipate claim 1.

New independent claim 20 is a machine-readable storage medium claim that recites very similar limitations to those described above regarding claim 1. Claim 20 is also therefore not anticipated by *Ngai*.

Dependent claims 1-4 and 21-25 incorporate all the limitations of either independent claim 1 or 20. Therefore, they are also not anticipated by *Ngai*. See: MPEP § 2141.03.

Claim Rejections - 35 U.S.C. § 103(a)

The Office Action rejects dependent claims 6-7 under Section 103(a) as being unpatentable over *Ngai* as applied to claims 1-5 in further view of *Ju* of record.

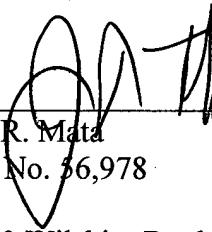
However, claims 6-7 depend from independent claim 1. As discussed above, *Ngai* does not teach or suggest the limitations of claim 1. *Ju* is not cited by the Office as teaching or suggesting the limitations of claim 1. Therefore claim 1 is not rendered obvious by the combination of *Ngai* and *Ju*. Thus, claims 6-7 are also not rendered obvious by the combination of *Ngai* and *Ju*. MPEP § 2141.03.

To the extent that the Office would apply the same rejection to new claims 24 and 25, they depend from independent claim 20. Claim 20 has limitations similar to those of claim 1, which is not rendered obvious by the combination of *Ngai* and *Ju*. Claim 20 is therefore also not rendered obvious by the combination of *Ngai* and *Ju*. Thus, claims 24 and 25 are also not rendered obvious by the combination of *Ngai* and *Ju*. MPEP § 2141.03.

CONCLUSION

For at least the foregoing reasons, Applicants submit that the rejections have been overcome. Therefore, claims 1-4, 6-7, and 21-25 are in condition for allowance and such action is earnestly solicited. The Office is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application. Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN, LLP



Jose R. Mata
Reg. No. 36,978

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA 90025-1026
(503) 439-8778

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Signature	11/21/2006
Gayle Bekish	Date